WASHINGTON DEPARTMENT OF ECOLOGY

ENVIRONMENTAL ASSESSMENT PROGRAM

FRESHWATER MONITORING UNIT

STREAM DISCHARGE TECHNICAL NOTES

STATION ID: 32B075

STATION NAME: Touchet River at Cummins Road

WATER YEAR: 2014

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Introduction

Watershed Description

The Touchet River is the largest tributary of the Walla Walla River in southeastern Washington. Its headwaters lie in the Blue Mountains above the town of Dayton in Columbia County. The main river is formed by the confluence of the North and South Forks.

Land use is primarily agricultural, consisting of dryland crops and irrigated farming in the lower portions.

Spring Chinook, steelhead, and bull trout are present within the watershed.

Gage Location

The gage is located at River mile 3.0 on the left bank, directly upstream of the Cummins Road bridge crossing, one mile north of Touchet, Washington. This gage was installed in June 2002.

Table 1. Basin Area and Legal Description

Drainage Area (square miles)	780 (USGS)
Latitude (degrees, minutes, seconds)	46° 03' 24" N
Longitude (degrees, minutes, seconds)	118° 40' 03" W

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	232
Median Annual Discharge (cfs)	130
Maximum Daily Mean Discharge (cfs)	1800
Minimum Daily Mean Discharge (cfs)	2.6
Maximum Instantaneous Discharge (cfs)	2040
Minimum Instantaneous Discharge (cfs)	2.6
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	541
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	13
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	4
Number of Un-Reported Days	16
Number of Days Qualified as Estimates	117
Number of Modeled Days	7

Note: Statistics displayed in Table 2 may not include values in which the predicted discharge exceeds the range of ratings.

Table 2 Discussion (Discharge Statistics)

The unreported days were due to ice-impacted data. Data is considered to be an estimate when the mean daily flow difference between corrected and uncorrected data is greater than 20%.

Seven discharge measurements were taken throughout the water year, ranging from 10 to 1440 cfs.

Table 3. Error Analysis Summary.

Potential Logger Drift Error (% of discharge)	6.5
Potential Weighted Rating Error (% of discharge)	12.9
Total Potential Error (% of discharge)	19.4

Table 3 Discussion (Error Analysis)

The 12.9 % potential weighted rating error was due to 3 of the 7 discharge measurements being rated as poor. These poor measurements were caused by less than ideal measurement cross sections. At mid and high end flows, cross section selection is very limited.

Table 4. Stage Record Summary

Minimum Recorded Stage (feet)	1.44
Maximum Recorded Stage (feet)	9.76
Range of Recorded Stage (feet)	8.32

Table 4 Discussion (Stage Record)

At times throughout the water year, the primary gage index (PGI) was dewatered or iced in. In these situations, stage readings were calculated using a regression between the PGI and a secondary gage index (SGI). The SGI's at this site are a staff relative tapedown from a reference point on the bridge and a staff relative laser level reading.

Table 5. Rating Table Summary

Rating Table No.	903	113	122
Period of Ratings	10/1/13 to 10/5/13	10/1/13 to 11/27/13	11/27/13 to 3/10/14
Range of Ratings (cfs)	1.3 to 4930	7.6 to 4930	3.0 to 4930
No. of Defining Measurements	22	17	17
Rating Error (%)	12.7	13.5	14.1

Rating Table No.	16	17	
Period of Ratings	3/6/14 to 3/30/14	3/11/14 to 9/30/14	
Range of Ratings (cfs)	119 to 2730	2.6 to 4930	
No. of Defining Measurements	1	12	
Rating Error (%)	10.8	12.4	

Rating Table No.			
Period of Ratings			
Range of Ratings (cfs)			
No. of Defining Measurements			
Rating Error (%)			

Table 5 Discussion (Rating Tables)

There were four precipitation events of varying degrees throughout the water year that resulted in rating shifts.

Peak flow occurred on March 10, 2014.

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	Slope Conveyance
Range of Modeled Stage (feet)	4.6
Range of Modeled Discharge (cfs)	3300
Valid Period for Model	See notes below
Model Confidence	3.4%

Table 6 Discussion (Modeled Data)

Valid Period of Model: January 10, 2013 to March 10, 2014, March 20, 2014 to September 30, 2014. Model does not apply to Rating 16.

Table 7. Survey Type and Date (station, cross section, longitudinal)

Type	Date
n/a	n/a

Table 7 Discussion (Surveys)

Activities Completed

No activities were completed outside of the normal site visits and flow measurements.

Appendix